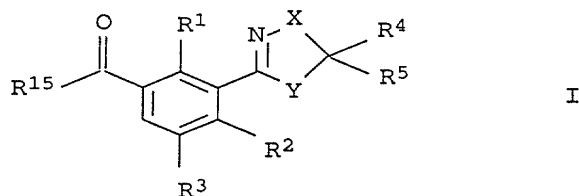


We claim

1. A 3-heterocyclyl-substituted benzoyl derivative of the formula I



where the variables have the following meanings:

- R¹, R² are hydrogen, nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl or C₁-C₆-haloalkylsulfonyl;
- R³ is hydrogen, halogen or C₁-C₆-alkyl;
- R⁴, R⁵ are hydrogen, halogen, cyano, nitro, C₁-C₄-alkyl, C₁-C₄-alkoxy-C₁-C₄-alkyl, di(C₁-C₄-alkoxy)-C₁-C₄-alkyl, di(C₁-C₄-alkyl)-amino-C₁-C₄-alkyl, [2,2-di(C₁-C₄-alkyl)-1-hydrazino]-C₁-C₄-alkyl, C₁-C₆-alkyliminoxy-C₁-C₄-alkyl, C₁-C₄-alkoxycarbonyl-C₁-C₄-alkyl, C₁-C₄-alkylthio-C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-cyanoalkyl, C₃-C₈-cycloalkyl, C₁-C₄-alkoxy, C₁-C₄-alkoxy-C₂-C₄-alkoxy, C₁-C₄-haloalkoxy, hydroxyl, C₁-C₄-alkylcarbonyloxy, C₁-C₄-alkylthio, C₁-C₄-haloalkylthio, di(C₁-C₄-alkyl)amino, COR⁶, phenyl or benzyl, it being possible for the two last-mentioned substituents to be fully or partially halogenated and/or to have attached to them one to three of the following groups:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

or

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5 R⁴ and R⁵ together form a C₂-C₆-alkanediyl chain which can be mono- to tetrasubstituted by C₁-C₄-alkyl and/or which can be interrupted by oxygen or by a nitrogen which is unsubstituted or substituted by C₁-C₄-alkyl;

or

10 R⁴ and R⁵ together with the corresponding carbon form a carbonyl or thiocarbonyl group;

15 R⁶ is hydrogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-alkoxy-C₂-C₄-alkoxy, C₁-C₄-haloalkoxy, C₃-C₆-alkenyloxy, C₃-C₆-alkynyloxy or NR⁷R⁸;

R⁷ is hydrogen or C₁-C₄-alkyl;

20 R⁸ is C₁-C₄-alkyl;

X is O, S, NR⁹, CO or CR¹⁰R¹¹;

25 Y is O, S, NR¹², CO or CR¹³R¹⁴;

R⁹, R¹² are hydrogen or C₁-C₄-alkyl;

30 R¹⁰, R¹¹, R¹³, R¹⁴ are hydrogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-haloalkoxycarbonyl or CONR⁷R⁸;

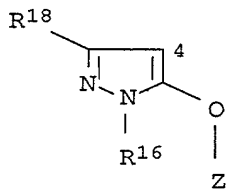
or

35 R⁴ and R⁹ or R⁴ and R¹⁰ or R⁵ and R¹² or R⁵ and R¹³ together form a C₂-C₆-alkanediyl chain which can be mono- to tetrasubstituted by C₁-C₄-alkyl and/or interrupted by oxygen or by a nitrogen which is unsubstituted or substituted by C₁-C₄-alkyl;

40 R¹⁵ is a pyrazole of the formula II which is linked in the 4-position

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II

where

R¹⁶ is C₁-C₆-alkyl;

Z is H or SO₂R¹⁷;

R¹⁷ is C₁-C₄-alkyl, C₁-C₄-haloalkyl, phenyl or phenyl which is partially or fully halogenated and/or has attached to it one to three of the following groups: nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁸ is hydrogen or C₁-C₆-alkyl;

where X and Y are not simultaneously sulfur;

with the exception of

4-[2-chloro-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1-ethyl-5-hydroxy-1H-pyrazole,

4-[2-chloro-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole,

4-[2-chloro-3-(5-cyano-4,5-dihydroisoxazol-3-yl)-4-methylsulfonylbenzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole,

4-[2-chloro-3-(4,5-dihydrothiazol-2-yl)-4-methylsulfonyl-benzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole and

4-[2-chloro-3-(thiazoline-4,5-dion-2-yl)-4-methylsulfonyl-benzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole;

or an agriculturally useful salt thereof.

2. A 3-heterocycl-yl-substituted benzoyl derivative of the formula I where the variables have the following meanings:

R¹, R² are hydrogen, nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio,

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C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl,
C₁-C₆-alkylsulfonyl or C₁-C₆-haloalkylsulfonyl;

5 R³ is hydrogen, halogen or C₁-C₆-alkyl;

10 R⁴, R⁵ are hydrogen, halogen, cyano, nitro, C₁-C₄-alkyl,
C₁-C₄-alkoxy-C₁-C₄-alkyl, di(C₁-C₄-alkoxy)-C₁-C₄-
alkyl, di(C₁-C₄-alkyl)-amino-C₁-C₄-alkyl,
[2,2-di(C₁-C₄-alkyl)-1-hydrazino]-C₁-C₄-alkyl,
C₁-C₆-alkyliminoxy-C₁-C₄-alkyl, C₁-C₄-alkoxycarbonyl-
C₁-C₄-alkyl, C₁-C₄-alkylthio-C₁-C₄-alkyl,
C₁-C₄-haloalkyl, C₁-C₄-cyanoalkyl, C₃-C₈-cycloalkyl,
C₁-C₄-alkoxy, C₁-C₄-alkoxy-C₂-C₄-alkoxy,
15 C₁-C₄-haloalkoxy, C₁-C₄-alkylthio,
C₁-C₄-haloalkylthio, di(C₁-C₄-alkyl)amino, COR⁶,
phenyl or benzyl, it being possible for the two
last-mentioned substituents to be fully or partially
20 halogenated and/or to have attached to them one to
three of the following groups:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl,
C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

or

25 R⁴ and R⁵ together form a C₂-C₆-alkanediyl chain which can be
mono- to tetrasubstituted by C₁-C₄-alkyl and/or
which can be interrupted by oxygen or by a
nitrogen which is unsubstituted or substituted by
30 C₁-C₄-alkyl;

or

35 R⁴ and R⁵ together with the corresponding carbon form a
carbonyl or thiocarbonyl group;

40 R⁶ is C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy,
C₁-C₄-alkoxy-C₂-C₄-alkoxy, C₁-C₄-haloalkoxy,
C₃-C₆-alkenyloxy, C₃-C₆-alkynyloxy or NR⁷R⁸;

R⁷ is hydrogen or C₁-C₄-alkyl;

45 R⁸ is C₁-C₄-alkyl;

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X is O, S, NR⁹, CO or CR¹⁰R¹¹;

Y is O, S, NR¹², CO or CR¹³R¹⁴;

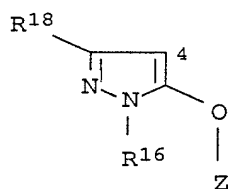
5 R⁹, R¹² are hydrogen or C₁-C₄-alkyl;

10 R¹⁰, R¹¹, R¹³, R¹⁴ are hydrogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-haloalkoxycarbonyl or CONR⁷R⁸;

or

15 R⁴ and R⁹ or R⁴ and R¹⁰ or R⁵ and R¹² or R⁵ and R¹³ together form a C₂-C₆-alkanediyl chain which can be mono- to tetrasubstituted by C₁-C₄-alkyl and/or interrupted by oxygen or by a nitrogen which is unsubstituted or substituted by C₁-C₄-alkyl;

20 R¹⁵ is a pyrazole of the formula II which is linked in the 4-position



II

30 where

R¹⁶ is C₁-C₆-alkyl;

35 Z is H or SO₂R¹⁷;

40 R¹⁷ is C₁-C₄-alkyl, C₁-C₄-haloalkyl, phenyl or phenyl which is partially or fully halogenated and/or has attached to it one to three of the following groups: nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

45 R¹⁸ is hydrogen or C₁-C₆-alkyl;

where X and Y are not simultaneously oxygen or sulfur;

with the exception of

- 5 4-[2-chloro-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1-ethyl-5-hydroxy-1H-pyrazole,
4-[2-chloro-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-benzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole,
4-[2-chloro-3-(5-cyano-4,5-dihydroisoxazol-3-yl)-4-methylsulfonylbenzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole,
10 4-[2-chloro-3-(4,5-dihydrothiazol-2-yl)-4-methylsulfonyl-benzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole and
4-[2-chloro-3-(thiazoline-4,5-dion-2-yl)-4-methylsulfonyl-benzoyl]-1,3-dimethyl-5-hydroxy-1H-pyrazole;

15 or an agriculturally useful salt thereof.

3. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in claim 1 or 2, where R³ is hydrogen.

20 4. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in any of claims 1 to 3, where

25 R¹, R² are nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl or C₁-C₆-haloalkylsulfonyl.

30 5. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in any of claims 1 to 4, where Z is SO₂R¹⁷.

35 6. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in any of claims 1 to 4, where Z is hydrogen.

40 7. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in any of claims 1 to 4 or 6, where X is oxygen and Y is CR¹³R¹⁴.

45 8. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in any of claims 1 to 4 or 6 or 7, where

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R⁴ is halogen, nitro, C₁-C₄-alkyl,
C₁-C₄-alkoxy-C₁-C₄-alkyl,
C₁-C₄-alkoxycarbonyl-C₁-C₄-alkyl,
C₁-C₄-alkylthio-C₁-C₄-alkyl, C₁-C₄-haloalkyl,
C₁-C₄-cyanoalkyl, C₃-C₈-cycloalkyl, C₁-C₄-alkoxy,
C₁-C₄-alkoxy-C₂-C₄-alkoxy, C₁-C₄-haloalkoxy,
C₁-C₄-alkylthio, C₁-C₄-haloalkylthio,
di(C₁-C₄-alkyl)amino, COR⁶, phenyl or benzyl, it
being possible for the two last-mentioned
substituents to be partially or fully halogenated
and/or to have attached to them one to three of
the following groups:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl,
C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R⁵ is hydrogen or C₁-C₄-alkyl;

or

R⁴ and R⁵ together form a C₂-C₆-alkanediyl chain which can be
mono- to tetrasubstituted by C₁-C₄-alkyl and/or
which can be interrupted by oxygen or by a
nitrogen which is unsubstituted or substituted by
C₁-C₄-alkyl;

or

R⁵ and R¹³ together form a C₂-C₆-alkanediyl chain which can be
mono- to tetrasubstituted by C₁-C₄-alkyl and/or
which can be interrupted by oxygen or by a
nitrogen which is unsubstituted or substituted by
C₁-C₄-alkyl.

9. A 3-heterocyclyl-substituted benzoyl derivative of the
formula I as claimed in any of claims 1 to 4 or 6 to 8, where

R⁴ is C₁-C₄-alkyl, C₁-C₄-haloalkyl,
C₁-C₄-alkoxycarbonyl or CONR⁷R⁸;

R⁵ is hydrogen or C₁-C₄-alkyl;

or

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5 R⁴ and R⁵ together form a C₂-C₆-alkanediyl chain which can be
mono- to tetrasubstituted by C₁-C₄-alkyl and/or
which can be interrupted by oxygen or by a
nitrogen which is unsubstituted or substituted by
C₁-C₄-alkyl;

or

10 R⁵ and R¹³ together form a C₂-C₆-alkanediyl chain which can be
mono- to tetrasubstituted by C₁-C₄-alkyl and/or
which can be interrupted by oxygen or by a
nitrogen which is unsubstituted or substituted by
C₁-C₄-alkyl.

15 10. A 3-heterocyclyl-substituted benzoyl derivative of the
formula I as claimed in any of claims 1 to 4 or 6 or 7, where
R⁴ and R⁵ are hydrogen.

20 11. A 3-heterocyclyl-substituted benzoyl derivative of the
formula I as claimed in any of claims 1 to 4 or 6 or 7 or 10,
where R¹⁸ is hydrogen.

25 12. 4-[2-Chloro-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonyl-
benzoyl]-1-methyl-5-hydroxy-1H-pyrazole.

30 13. An agriculturally useful salt of 4-[2-chloro-3-(4,5-
dihydroisoxazol-3-yl)-4-methylsulfonylbenzoyl]-1-methyl-5-
hydroxy-1H-pyrazole.

14. A 3-heterocyclyl-substituted benzoyl derivative of the
formula I as claimed in any of claims 1 to 4 or 6, where

35 X is S, NR⁹, CO or CR¹⁰R¹¹;

or

40 Y is O, S, NR¹² or CO.

15. A 3-heterocyclyl-substituted benzoyl derivative of the
formula I as claimed in any of claims 1 to 4 or 6 or 14,
where R¹⁸ is hydrogen.

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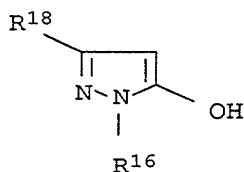
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16. A 3-heterocyclyl-substituted benzoyl derivative of the formula I as claimed in any of claims 1 to 4 or 6 or 14, where

- 5 R⁴ is halogen, cyano, nitro, C₁-C₄-alkyl,
 C₁-C₄-alkoxy-C₁-C₄-alkyl,
 C₁-C₄-alkoxycarbonyl-C₁-C₄-alkyl,
 C₁-C₄-alkylthio-C₁-C₄-alkyl, C₁-C₄-haloalkyl,
 10 C₁-C₄-cyanoalkyl, C₃-C₈-cycloalkyl, C₁-C₄-alkoxy,
 C₁-C₄-alkoxy-C₂-C₄-alkoxy, C₁-C₄-haloalkoxy,
 C₁-C₄-alkylthio, C₁-C₄-haloalkylthio,
 di(C₁-C₄-alkyl)amino, COR⁶, phenyl or benzyl, it
 being possible for the two last-mentioned
 15 substituents to be partially or fully halogenated
 and/or to have attached to them one to three of
 the following groups:
 nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl,
 C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;
- 20 R⁵ is hydrogen or C₁-C₄-alkyl;
- or
- 25 R⁴ and R⁵ together form a C₂-C₆-alkanediyl chain which can be
 mono- to tetrasubstituted by C₁-C₄-alkyl and/or
 which can be interrupted by oxygen or by a
 nitrogen which is unsubstituted or substituted by
 C₁-C₄-alkyl;
- 30 or
- 35 R⁴ and R⁹ or R⁴ and R¹⁰ or R⁵ and R¹² or R⁵ and R¹³ together
 form a C₂-C₆-alkanediyl chain which can be mono- to
 tetrasubstituted by C₁-C₄-alkyl and/or which can be
 interrupted by oxygen or by a nitrogen which is
 unsubstituted or substituted by C₁-C₄-alkyl;
- 40 R¹⁸ is C₁-C₆-alkyl.

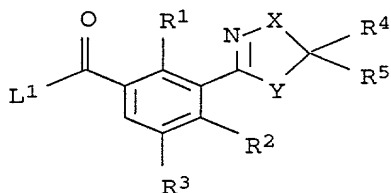
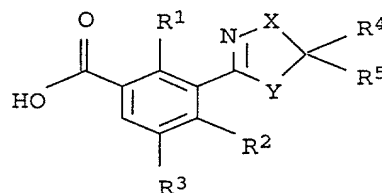
17. A process for the preparation of 3-heterocyclyl-substituted benzoyl derivatives of the formula I as claimed in claim 1, which comprises acylating the pyrazole of the formula II where Z = H, where the variables R¹⁶ and R¹⁸ have the meanings given under claim 1,

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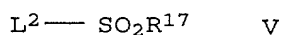


II (where Z = H)

with an activated carboxylic acid III α or with a carboxylic acid III β ,

III α III β

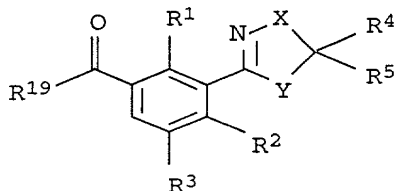
where the variables R¹ to R⁵, X and Y have the meanings given under claim 1 and L¹ is a nucleophilically displaceable leaving group, subjecting the acylation product to a rearrangement reaction in the presence or absence of a catalyst to give the compounds I (where Z = H) and, if desired, to prepare 3-heterocyclyl-substituted benzoyl derivatives of the formula I where Z = SO₂R¹⁷, reacting the product with a compound of the formula V,



where R¹⁷ has the meaning given under claim 1 and L² is a nucleophilically displaceable leaving group.

18. A 3-heterocyclyl-substituted benzoic acid derivative of the formula III,

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III

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where R¹⁹ is hydroxyl or a radical which can be removed by hydrolysis and variables R¹ to R⁵, X and Y have the meanings given under the claims 1 to 16, with the exception of methyl 2-chloro-3-(4,5-dihydroisoxazol-3-yl)-4-methylsulfonylbenzoate, methyl 2-chloro-3-(4,5-dihydrooxazol-2-yl)-4-methylsulfonylbenzoate and methyl 2,4-dichloro-3-(5-methylcarbonyloxy-4,5-dihydroisoxazol-3-yl)benzoate.

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19. A 3-heterocyclyl-substituted benzoic acid derivative of the formula III as claimed in claim 18 where the variables R¹ to R⁵, X and Y have the meanings given under claims 2 to 16.

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20. A 3-heterocyclyl-substituted benzoic acid derivative of the formula III as claimed in either of claims 18 or 19, where

R¹⁹ is halogen, hydroxyl or C₁-C₆-alkoxy.

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21. A composition comprising a herbicidally active amount of at least one 3-heterocyclyl-substituted benzoyl derivative of the formula I or of an agriculturally useful salt of I as claimed in any of claims 1 to 16, and auxiliaries conventionally used for the formulation of crop protection products.

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22. A process for the preparation of a composition as claimed in claim 21, which comprises mixing a herbicidally active amount of at least one 3-heterocyclyl-substituted benzoyl derivative of the formula I or of an agriculturally useful salt of I as claimed in any of claims 1 to 16 and auxiliaries conventionally used for the formulation of crop protection products.

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23. A method of controlling undesirable vegetation, which comprises allowing a herbicidally active amount of at least one 3-heterocyclyl-substituted benzoyl derivative of the

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formula I or of an agriculturally useful salt of I as claimed in any of claims 1 to 16 to act on plants, their environment and/or on seeds.

5 24. The use of a 3-heterocyclyl-substituted benzoyl derivative of the formula I or an agriculturally useful salt thereof as claimed in any of claims 1 to 16 as herbicide.

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